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ABSTRACT

This study examined the use of writing as an instructional methodology for enhancing Afro-American preservice teachers' knowledge of and attitudes towards teaching during their year-long field practicum experience. Data are presented relative to the interrelatedness of writing competence and cognitive complexity. Subjects (n=81) included 27 freshmen, 27 sophomores, and 27 juniors. During the first 2 weeks of the fall semester, participants responded to a pre-test essay that required an explanation of the student's concept of teaching. A posttest essay, administered at the end of the spring semester, required the preservice teacher to select either assertive discipline or logical consequence discipline as the better way to establish and maintain positive classroom ambiance. The writing samples were analyzed using writing and cognitive complexity evaluation criteria. Results suggest that writing and complexity are qualitatively related, with writing competence improving toward the adequate criteria. The use of writing served to clarify ways in which knowledge, skills, and attitudes toward teaching are acquired. (LL)

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Levels of Cognitive Complexity and Writing Competence Among Afro-American Freshmen, Sophomores, and Juniors Preservice Teachers

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Levels of Cognitive Complexity and Writing Competence Among Afro-American Freshmen, Sophomores, and Junior Preservice Teachers

Introduction

In recent years, research in teacher education has focused on issues related to effective teaching (Brophy and Good, 1985; Rupley, Wise, & Logan, 1986; Shulman, 1887; Goodlad, 1990; Kemp, 1990). A major theme of this research tradition focused on attempts to characterize and evaluate those attributes of effective teaching (Schon, 1987; Ross, 1990; Zeichner, Kenneth & Liston, 1990; Sparks-Langer & Colton, 1991). The supposition advanced was that teachers are rational professionals who make judgments in uncertain, complex school and community environments (Shavelson and Stern, 1981; Schon, 1983; Giroux & McLaren, 1988; Morine-Dershimer, 1989; Ross, 1990). This study investigated interrelatedness of preservice teachers' writing competence and level of cognitive complexity for teaching.

Review of the Literature

The general premise of this investigation was that language and thought are interrelated since the use of language assumes certain underlying cognitive processes according to Bruner, 1966; Berthoff, 1978; and Scardamalia & Bereiter, 1985.

Writing and Cognitive Complexity

Flower and Hayes (1981) argued that writing engaged the individual with a task environment involving translation of information into written words. Writing facilitates cognitive complexity in several ways according to Glatthorn (1985). First, writing facilitates and shapes the ability to think and

communicate about concrete reality. Second, written language, enhances the use of analytical processes on language beyond the concrete context.

Competence in information processing and level of cognitive complexity are interrelated and interdependent (Kagan and Kogan, 1970; Flower & Hayes, 1981). In its very broad sense, cognitive complexity indicates something about how persons structure their knowledge of their environment (Bieri, 1966). According to Bieri, (1966) levels of personal cognitive complexity are inferred on the basis of the individual's verbal and non-verbal behavior. From this verbal prospective writing appears to be essential for enabling prospective teachers to develop degrees of cognitive complexity about teaching. It may be conjectured then that the nature of written responses as well as the magnitude of discriminations about teaching are approximations of level of cognitive complexity (Bieri, 1966).

The writing process seems to be an appropriate medium for enhancing the quality and diversity of preservice teachers' cognitive complexity of teaching. Cognitive complexity shows a developmental increase through the acquisition of an array of new concepts for differentiating ideas; rather than through the refined articulation of already existing educational concepts (Lewin, 1951; Perry, 1970; Walter & Gardner, 1985). Enabling preservice teachers to acquire an array of new creative teaching concepts is critical for effective teaching in the divergent school contexts of our society. Writing holds the potential for

encouraging reflective critical and creative analysis of teaching.

Cognitive Complexity, Personal Pedagogy, and the Writing Process

Cognitive Complexity. All teaching is essentially an intentional act directed at increasing the students' cognitive complexity or understanding of the subject. At one end of the spectrum, some preservice teachers' cognitive complexity of teaching may be severely limited. They show understanding of the concept or skill in very restricted aspects of teaching. At the other end of the spectrum of cognitive complexity, preservice teachers would show creative mastery of the concepts and skills over many dimensions of multitude variables involved in teaching. Thus a high degree of cognitive complexity is evidenced by the students' illumination of both the explicit and implied relationships that exist among the principles and generalization which influence the contexts and processes of teaching.

Concepts such as education, schooling, learning, community, classroom, students, parents, curriculum, legislation, accountability, norms, culture and others shape the education process. An articulation of the general and specific principles germane to these concepts, in the creative advancement of education, mirrors increased levels of cognitive complexity.

Personal Pedagogy. Prospective teachers are encouraged to integrate their beliefs and attitudes with the knowledge and professional practice of teaching. According to Nickerson (1984), writing sharpens fundamental cognitive processes such as

comparing, ordering, classifying, inferring, and predicting. These processes are assumed essential to the development of reflective performance required by the intellectually demanding tasks involved in the processes associated with teaching. Finally, these cognitive progresses encourage prospective teachers to acquire a personal style of pedagogy (Bizzell, 1986).

Teaching involves the integration of knowledge, values, and skills (Lortie, 1975; Grioux, 1988; Goodlad, 1990). An understanding of teaching requires preservice teachers to synthesize knowledge of teaching with their personal values systems, unique attitudes, and experiences. Knowledge, according to Polanyi (1966), is not self illuminating. Rather it requires the individual's personal conceptualization as well as introspection processes. For Polanyi (1966), this form of introspection is actually a living process whereby one gradually comprehends the multidimensional educational environment under consideration. Consequently, each prospective teacher must assume personal responsibility in the process of becoming an effective teacher.

The Writing Process. The writing process would encourage preservice teachers to examine the dimensions of multiple-meanings associated with their preprofessional experiences. Writing allowed sustained time for them to analyze and to develop critical reflection. Through processes of ordering, classifying, synthesizing, and clarifying, prospective teachers should increase the quality of cognitive complexity in understanding the teaching process. According to Perry (1968),

it is precisely the nature of this orderliness in a person's experiences which enables meaningfulness to emerge and express itself in the person's performance. Thus prospective teachers would acquire those intellectual capabilities for reinventing effective teaching processes across differing educational contexts.

Research Statements

1. Since thinking and writing are interrelated, increased writing instructional activities should affect both the quality of preservice teachers' writing competence and level of cognitive complexity.
2. In view of the developmental nature of writing competence and cognitive complexity, higher degrees of performance should be evidenced by junior preservice teachers than by either freshmen or sophomores.
3. Quantitative differences in cognitive complexity should be evidenced among different concepts in teaching.

Context of the Field Practica Instructional Program

Structure

The writing activities were designed for preservice teachers enrolled in the three level of the Introduction to Teaching courses. Students began Introduction to Teaching Level One in the freshmen year. Level III of this sequence is completed during the junior year. At the completion of the three levels of the Introduction to Teaching sequence, each student completed a minimum of one hundred five hours of practica experiences.

Each of these three courses consisted of two semesters combining field practica experiences with specific class instruction on teaching. The field practica experiences consisted of a range of activities relating to teacher education which were performed in schools. These activities were directly related to and directed toward the transition of students' expertise from theory to practice in actual teaching-learning situations.

Curriculum

The basic content for the three Introduction to Teaching courses consisted of fifteen categories of teaching objectives. These objectives were focused on both the context and process of teaching. This core of objectives focused on writing activities in the three courses. The instructional activities encouraged students to write five to ten minutes on specific topics or simulations of teaching events. The writing activities either commenced after small group discussions or preceded small group discussions.

Prospective teacher were encouraged to critically examine their values and attitudes relative to education and teaching. They were afforded instructional opportunities to help them understand how their collection of beliefs help form the framework of a personal philosophy that became their philosophy of life, learning, and teaching. Several course sections were devoted to a clarification of beliefs and to a consideration of how personal mind-set influenced professional decisions.

Students wrote about their underlying assumptions and expectations to several questions. Some of these questions were 1) What is the purpose and function of schools? 2) That is the purpose of teachers? 3) How should teachers teach? 4) What are your personal strengths that might help you to become an effective teacher? and 5) What personal qualities do you have that limit your ability to teach? Students were encouraged to review these questions periodically to detect any changes in their personal beliefs. Other types of writing activities included: a) describing actual classroom practica experiences, b) writing lessons, and c) writing a research paper.

All of the writing assignments were designed to encourage students to examine their value and attitudes about the context and process of teaching. These writing assignments were followed up in class discussions. Other assignments encouraged students to write briefly, followed by individual presentations of their writing, and concluded with additional writing for more reflective analysis.

Methodology

Subjects

The subjects consisted of 81 undergraduate, Afro-American preservice teachers enrolled in a small urban university. Included in the cluster sample were 27 freshmen, 27 sophomores, and 27 juniors.

Design

A pre-post test design was used as the basic design for this study. All subjects were given 30 minutes to respond to a pre-

test essay during the first two weeks of the fall semester. This essay required students to explain their concept of teaching. Also they were required to illustrate how their concept of teaching may affect their students' progress, their teaching style and the perceptions of their students' parents.

Students completed both the fall and spring sessions of one of three levels of a Introduction to Teaching courses. Freshmen were enrolled in level one, sophomores in level two, and juniors in level three. Several variables differentiated the three groups at the completion of the study. Freshmen completed 34 class sessions, fifteen hours of field experiences, and one school settings. Sophomores had 68 class sessions, 45 field practica hours, and three different school settings. In contrast, juniors had completed 72 class sessions, 110 field practica hours, and 5 different school settings.

All students completed the post essay at the end of the spring semester. The post essay required students to select either a) assertive discipline or b) logical consequence discipline to establish and maintain positive classroom discipline. The time allowed for students to write the essay was thirty minutes.

Method of Writing Analysis

Each of the essays was rated holistically according to Cooper (1977) standards by two elementary school teachers and a university faculty. Essays with different scores were read a second time by each of the judges. Discrepancies which existed after the second reading were revolved through consultation

between the two readers. Prior to rating the essays both readers discussed the criteria.

The criteria for judging writing competence were adapted from a scoring criteria suggested by Cooper (1977). The following scores and criteria were used to evaluate the writing competence.

Score 1-Criteria: a) Weak or no organization; b) Consistent patterns of mechanical and grammatical errors.

Score 2-Criteria: a) Inadequate organization, examples, style; b) Slight evidence of central idea and development.

Score 3-Criteria: a) Adequate organization, examples, style; b) Some grammatical and mechanical errors; c) Some forethought evident in conception of a central idea.

Score 4-Criteria: a) Strong in one or two of these areas: organization, examples, style; b) Forethought evident in conception of idea; c) Few grammatical and mechanical errors.

Score 5-Criteria: a) Strong organization (Clear beginning, middle, end); b) Strong examples (sustained and developed); c) Strong style (prose fluid, at time graceful); d) Fresh conception of idea or approach; e) Minor mechanical or grammatical errors.

Method of Cognitive Complexity Analysis

The criteria for judging preservice teachers' degree of cognitive complexity were adapted from Bloom's (1956) Taxonomy of Educational Objectives: The Classification of Educational Goals. The following rating criteria were used to judge the cognitive complexity level indicated by the students' essays.

Score 1-Criteria: Illustrated understanding at the knowledge level of cognition; Recall level

Score 2-Criteria: Translation of concepts by interpreting, explaining, summarizing, predicting consequences or effects.

Score 3-Criteria: Generalize and apply facts, principles, and theories in new situations; solved problems in unique ways.

Score 3-Criteria: Ability to break down facts, principles, and theories into their component parts.

Score 4-Criteria: Analysis and recognition of the interrelationships among the facts, principles, and theories.

Score 5-Criteria: Ability to creatively use facts, principles, concepts, and theories to formulate new patterns of structures.

Score 6-Criteria: Ability to judge the value of facts, principles, concepts, and theories using specific criteria.

Results

This study was conducted to examine the use of writing as an instructional media for enhancing knowledge and skills of preservice teachers. To answer the research question of the interrelatedness of writing competence and level of cognitive complexity, mean and standard deviation scores were computed for the pre and post rating assigned by the three judges. Percentage scores were computed to illustrate rating by each set of scoring criteria.

Indicated in Table 1 are the means and standard deviations of the writing competence scores for the pre and post essays.

Table 1

Means and Standard Deviations of Writing Competence Scores for the Pre and Post Essays by Levels of Introduction to Teaching Courses

	Total of the three levels		Freshmen Level 1		Sophomores Level 2		Juniors Level 3	
	M	SD	M	SD	M	SD	M	SD
Pre-Essay Teaching	2.8	.80	2.5	.70	2.7	.66	3.4	.71
Post-Essay Discipline	2.9	.62	2.8	.62	2.6	.50	2.9	.49

A low score of 1 denoted weak organization, while a high score of 5 indicated strong organization, examples, and style, with minor mechanical or grammatical weaknesses. For the total group, the pre-essay mean of score of 2.8 and the post-mean of 2.9 indicated an increase by .1. These means showed that the total group level of writing competence indicated slightly below average organization. This pre and post writing competence was characterized by evidence of some forethought in conception of an idea or approach. At both times some grammatical and mechanical errors seriously impede the flow of the essays.

The most important difference between the group's pre and post writing competence was less qualitative than quantitative. This quantitative change is indicated by the difference between the pre-essay standard deviation of .80, and .62 for the post-essay. The lower standard deviation post essay score of .62 indicated that more of the students increased their writing

competence toward the adequate level of competence. In essence, a greater number of students scored at the adequate level of writing competence on the post-essay than on the pre-essay.

The mean scores for level 1 (2.5), Level 2 (2.7) and Level 3 (3.4) indicated general agreement with the total group mean (2.8). The difference among the three groups' pre-essay writing competence was minimal.

The post essay competence score for level 1 (2.8), level 2 (2.6), and level 3 (2.9) indicated compatibility with the total group's post level competence score of 2.9. Thus there was no large qualitative difference among these groups. The standard deviation scores for all three groups indicate qualitative progress in writing competence. All groups showed small standard deviations on the post essays, Level 1 (.62), Level 2 (.50), and Level 3 (.49) These smaller post-essay standard deviations scores revealed that the greater number of students performed slightly below the adequate organizational level of competence.

There is an increasing degree of qualitative writing competence for Level 1 to Level 3. Differences in pre-post essay writing competence standard deviation scores were 8 for Level 1, 16 for Level 2, and 22 for Level 3. This evidence suggested that writing competence increased with direct instruction. These differences in standard deviation scores also revealed that writing competence was a process that emerged gradually from the freshman through the junior year. The greater qualitative difference in writing competence was indicated at the junior levels.

Indicated in Table 2 are the per cent of students pre and post writing performance.

Table 2

Composition Organization Percentage Scores for the Pre and Post Essays of the Combined Three Levels of Introduction to Teaching Courses

	Degree of Composition Organization				
	Score 1 Weak	Score 2 Inadequate	Score 3 Adequate	Score 4 Strong	Score 5 Very Strong
	Per cent	Per cent	Per cent	Per cent	Per cent
Pre-Essay Teaching	3.2	29.0	51.6	14.5	1.6
Post-Essay Discipline	0.0	22.8	61.4	15.8	0.0

The pre-essay percent of 51.6 on score 3 and post-essay per cent of 61.4 on score 3 illustrated that the majority of the students demonstrated adequate writing competence. The difference in the pre-post per cents for score 3 illustrated the quality of the students' progress.

The effectiveness of the instructional program is best illustrated by the per cents for score 1, score 2, and score 3. The per cent of students who demonstrated either weak or inadequate writing competence was reduced. In addition, a greater per cent of students demonstrated adequate competence on the post essay than on the pre-essay. The program was minimally

effective for encouraging both strong and very strong writing competence. There is only a slight difference in the pre and post per cents on score 4 and score 5.

Indicated in Table 3 are the cognitive levels of complexity scores.

Table 3

Means and Standard Deviations of Cognitive Complexity Scores for the Pre and Post Essays by the Three Levels of Introduction to Teaching Courses

	Levels of Introduction to Teaching Courses							
	Total		Freshmen Level 1		Sophomores Level 2		Juniors Level 3	
	M	SD	M	SD	M	SD	M	SD
Pre-Essay Complexity Teaching	2.1	1.0	1.4	.57	2.2	.94	2.9	.99
Post-Essay Complexity Discipline	2.5	.92	2.3	.84	2.6	.77	2.8	1.2

Levels of cognitive complexity indicated students' degree of understanding of the concepts of teaching. Low level competence would suggest a low level of understanding. The higher the cognitive complexity level, the greater degree of personal meaningfulness do these concepts have for the students. Higher complexity levels would suggest a greater level of integration of the concepts with the student's personal style. Consequently, the greater the cognitive complexity, the greater probability that the student will implement them into teaching.

For the total group, the level of complexity was at the comprehension level. The mean pre-essay complexity score for the concept of teaching was 2.1 and 2.5 on the post-essay on the concept of classroom discipline. The difference is minimal, but does indicate growth toward the application level of complexity. On both concepts, students were able to explain their ideas within the limitations of the definitions. For example, students restated the concepts within the limitations of their actual experiences.

Most students did not discuss, state, or explain the relationships of concepts of the full content and process of teaching. Progress in cognitive complexity was not quantitatively and qualitatively demonstrated among all three groups. The greater progress was demonstrated by the freshman group of pre-service teachers. The mean pre-essay score of 1.4 indicated that the group was able only to demonstrate understanding of teaching at the knowledge level of cognitive complexity. In contrast, the post-essay mean score of 2.3 illustrated progress at the comprehension level of cognitive complexity.

There was only slight progress for the sophomores. Their mean pre-essay score of 2.2 and their mean post-essay score of 2.6 illustrated that this group remained at the comprehension level of complexity. In comparison, the junior pre-service teachers showed no quantitative progress. Their pre-essay score of 2.9 and post-essay score of 2.8 illustrated that this group performed slightly below the application level of competence.

While the freshmen group demonstrated the greatest progress, the juniors consistently demonstrated the highest level of cognitive complexity. The standard deviation [SD] scores indicated qualitative progress and differences among the three groups. The greatest qualitative difference was evidenced among the freshman group. The pre standard deviation of .57 increased to a post standard deviation score of .84. This larger post standard deviation score revealed that while some students in the group performed above the comprehension level, others remained at the knowledge level.

In contrast, the sophomore pre SD score of .92 and post SD score of .77 indicated a homogeneous qualitative difference. While the group remained above the comprehension level, more students demonstrated performance at the comprehension level. For level 3, the juniors' pre SD score of .99 and post SD score of 1.2 illustrates little qualitative difference. Students' level of cognitive complexity remained constant on teaching and discipline complexity. Indicated in Table 4 are per cent scores for the pre and post levels of cognitive complexity.

Table 4

Per cent of Cognitive Complexity Scores for the Pre and Post Essays of the Combined Three Introduction to Teaching Levels

Degree of Cognitive Complexity	Pre-Essay Teaching Per cent n=62	Post Essay Discipline Per cent n=57
Score 1 Knowledge	33.9	10.5
Score 2 Comprehension	38.7	43.0
Score 3 Application	14.5	35.1
Score 4 Analysis	12.9	8.8
Score 5 Synthesis	0.0	0.0
Score 6 Evaluation	0.0	1.8

On both the pre and post essays the majority of students performed within the knowledge, comprehension, and application cognitive levels. In contrast, less than 13 per cent of all students illustrated competence with the concepts of teaching and discipline at the analysis, synthesis, and evaluation levels of cognition. The large decrease in the pre-essay knowledge per cent score 1 (33.9) and the knowledge post essay score 1(10.2) is important. In contrast, the large increase in the post application per cent score 3 (35.1) indicated both the degree and

quality of change in students' cognitive complexity. The post essay knowledge score 1 (10.5), comprehension score 2 (43.0), and application score 3 (35.1) suggested that the increased use of writing in the three levels of Introduction to Teaching courses was related to the increased cognitive complexity demonstrated by these pre service teachers.

Writing Samples

The three writing samples illustrate the interrelationship between progress in writing competence and cognitive complexity of the students. Writing Sample A was assigned a score of 2 according to the writing criteria scale (page 12).

Writing Sample A

This is my first year as a high school teacher and I have been assigned to teach 8th grade Math. The model of discipline I would use is assertive discipline.

From my observation in the schools, I noticed that students tend to run over teachers who show they have no control over their classrooms. On the other hand, the teachers who let the students know that they have control of their classrooms will have less discipline problems and will be able to get more done and teach more.

The reason why I ~~choose~~ chose assertive discipline is because I am there to teach the children, not only math, but if they have a behavior problem, I would like to help them control that also. I think that's a part of teaching. By letting the students know that I am in control and that they are there to learn will help control their behavior.

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There is slight evidence of central idea development in the conception of the topic. The first paragraph lacks an adequate definition of assertive discipline and a plan for developing the essay. Two examples are listed in paragraph two. However, the examples lack development and show slight follow through from paragraph one. In paragraph three, this student continued to list ideas which lacked adequate organization.

Cognitive complexity was rated low, at the recall level on Bloom's cognitive taxonomy. Writing sample A gives slight evidence of explaining the concept under consideration. There appears to be only minimal comprehension of the multiple principles underlying these facts within the broad dimensions of the teaching process. For Writing Sample A, both level of writing competence and level of cognitive complexity regarding an educational issue were compatible.

In comparison, Writing Sample B illustrates a greater degree of competence in writing and cognitive complexity. The judges assigned a score of three for writing competence. The writing lacks a clear focus. However, in contrast to Writing Sample A, there is greater evidence of central theme development in the conception of the topic. There are some grammatical and mechanical errors, but none that seriously impedes understanding.

This prospective teacher demonstrated a higher level of cognitive complexity than that evidenced in Writing Sample A. This student appears to have reached the application stage of Bloom's taxonomy. There is evidence of an awareness of many

Writing Sample B

Teaching involves many different things. Teaching involves being a manger, a social person, an organizational person, legal person and having an academic role. At some point in time, a teacher might be in all of these positions. She must be prepared to adjust to the situation in which she is in. For example, there might be a student who has run away from home; the student confides in the teacher and tells her reason. I am in a social position and I have to respect the student if she asks her to keep everything that she tells her confidential. On the other hand, I might be in a managerial position. In that case, I would have to exercise control of the classroom through verbal, facial, or written presentation. In any of the positions listed above, that will play a role in teaching style and student performance as well as parent perception. If a teacher cannot manage her classroom, students are not going to learn and the average parent would have bad perceptions of the cooperating teacher. In a social situation, if a teacher never smiled or acted like a friend, many students would feel uncomfortable around her and this could affect their learning (afraid to ask questions). Also, the majority of students would never confront her about a problem and the parent would not want to talk to the teacher about her child's report card. In conclusion, the teacher has a duty to maintain a positive role in teaching because many can be affected by her negligence.

factors influencing classroom discipline. This students is beginning to break down these facts and principles so that their organizational structure may be understood. However, the student merely enumerates these, discussing none in depth.

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Management, organization, academic goals, legal and social factors are listed, but no where does the student illustrate an analysis and synthesis of the interrelationships among them.

Writing Sample C reflects a much higher level of cognitive

Writing Sample C

This is my first teaching position. I have been assigned to teach a 9th-12th grade algebra course at an inner-city school which is located in a poverty area. I am deciding on which discipline method should I use. Should I use the assertive discipline model or the logical consequence model. From personal experiences encountered during field observation at an inner-city school located in a poverty area in my home town, I would deem appropriate if I use the assertive discipline model.

I have decided to use the assertive discipline model because I want to let my students know what is expected of them. Also want to let my students know the consequence that will be served upon them if they do not abide by the rules and regulations we will have agreed upon.

Also, since some of the students who come from homes located in a poverty area tend to be boisterous uncooperative, as an indication of rebellion against their unfavorable conditions, the assertive discipline model is most appropriate. It is appropriate because it will allow me to put across to the students that certain behaviors are not accepted and expected at school. Thus, in my opinion, assertive discipline will alleviate some of the problems I will encounter, as long as I do not want the students to say I were there "did suppose."

Well, the first day of school is only a week away. My only worry is if my suspension is right by choosing the assertive discipline model. If I am wrong, you let your better judge, I will make a change and find the appropriate discipline model.

complexity than either of the two previous samples. The degree of cognitive complexity was judged at level 4, the analysis level of Bloom's taxonomy. There is evidence of the analysis of the interrelationships of the multiplicity of the teacher's roles over a broad spectrum of the teaching process. Examples are described and analyzed.

In the first paragraph, this prospective teacher makes a choice between the two models of discipline that had been discussed in the course. Her choice, that of assertive discipline, is supported by a consideration of the social background of the students and an awareness of some of its positive elements. The student acknowledges the relationship between classroom discipline and the community in which the students live. In the last paragraph, this prospective teacher shows a willingness to modify her disciplinary strategies if they prove ineffective. She is beginning to show critical awareness that critical judgment must be used the make decisions appropriate to varying circumstances.

Writing Samples A, B, and C illustrated the developmental interrelationship between writing competence and critical cognitive complexity regarding a given educational issue. They demonstrated also the range of writing and critical thinking that exists in undergraduate classrooms. All three students were completing the sophomore level of the Introduction to Teaching course. As illustrated by the Writing Samples, the students varied considerably in their ability to write and to apply models of discipline presented in the course.

Conclusions

This study examined the use of writing as a methodology for enhancing preservice teachers' knowledge and attitudes of teaching during their involvement in a year long field practica school site experiences. Both their writing competence and their degree of cognitive complexity were operationalized to measure the effectiveness of the writing instructional activities. The general direction of the change in their pre and post essay scores indicated that the writing and cognitive complexity were greater qualitatively then quantitatively.

The data on writing competence illustrated that, quantitatively, most students performed between the inadequate and adequate range on both the pre and post essays. However, more students' writing competence improved toward the adequate criteria. In contrast, except for freshmen, cognitive complexity scores remained consistent between the comprehension and application degrees of complexity. Freshmen showed definite progress in cognitive complexity from knowledge to the next higher level, comprehension. Qualitatively, progress in cognitive complexity was convergent for sophomores and divergent for freshmen and juniors.

The constellations in preservice teachers writing and cognitive performance suggested that both writing competence and cognitive complexity are interrelated phenomena. The stability in performance and qualitative variations support Perry's supposition of need to progress and the need to conserve. It appears that these are uniquely personal

choices, determined to a great extent by each preservice teacher. In view of this investigation, the use of writing served to illuminate the quality of students' information processing competence of the knowledge, skills and attitudes of teaching.

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Abstract

Title: Levels of Cognitive Complexity and Writing Competence Among Afro-American Freshmen, Sophomores, and Juniors Preservice Teachers

This study examined the use of writing as an instructional methodology for enhancing Afro-American preservice teachers' knowledge and attitudes of teaching during their involvement in a year long field practicum experience. Data are presented relative to the interrelatedness of their writing competence and cognitive complexity for teaching among 81 preservice teachers. A pre and post analysis of writing samples was conducted and descriptive statistics were used to test the research statements. Writing samples are presented and analyzed using the writing and cognitive complexity evaluation criteria. The results indicated that writing and cognitive complexity were qualitatively related. Writing competence improved toward the adequate criteria. In contrast, pre and post levels of cognitive complexity, except for freshmen, remained between level 2-comprehension and level 3 -application understanding of teaching phenomena. In view of this study, the use of writing served to increase our theoretical knowledge of how Afro -American preservice teachers acquire knowledge, skills, and attitudes for teaching.